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NATIONAL LIBRARY of MEDICINE NEWS

Published for institutions and individuals interested in health sciences communications.

# Report of the Planning Panel on the Education and Training of Health Sciences Librarians

*The NLM Long Range Plan on the Education and Training of Health Sciences Librarians* is now available on request from NLM's Public Information Office and via the Internet (see below).

The report was prepared by a distinguished panel chaired by Dr. **Thomas Detre** of the University of Pittsburgh (*News,* January-February 1994), and is the result of a year-long effort by a multidisciplinary team of health professionals, librarians, library school faculty, medical informaticians, and NLM staff. It has been incorporated by the NLM Board of Regents into its official Long Range Plan for the Library, taking its place in the series of Plans first published in 1987 with updates on Outreach (1989), Imaging (1990), and Toxicology & Environmental Health (1992). Dr. **Elliot R. Siegel,** NLM's associate director for Health Information Programs Development (HIPD), coordinated the work of the panel along with **Susan P. Buyer,** who served as the panel's executive secretary.

In accepting the report, Dr. **H. Kenneth Walker** underscored that the report " ... lays out a number of opportunities for health sciences librarians, schools of library and information science, professional associations, and the National Library of Medicine to work together to assure that society benefits from the considerable skills and contributions of health sciences librarianship." The report's goals and recommendations address the need to:

- Prepare for the new forms of information, new users, and new practice patterns that may be required for health sciences librarianship.
- Match the capabilities of health sciences librarians to the needs of employers.

*Cont. p. 2*

**Staff members from NLM's History of Medicine Division, Young Rhee and David Vecciole, appear on the cover of the newly issued Planning Panel Report. They are shown searching "Images from the History of Medicine," a databank of some 60,000 items from the NLM's pictorial collection.**

NATIONAL LIBRARY of MEDICINE NEWS

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*The Secretary of Health and Human Services has determined that the publication of this bimonthly periodical is necessary in the transaction of the public business required by law of this Department. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget through June 30, 1996.*

*The paper used in this publication meets the minimum requirements of American National Standard for Information Sciences—Permanence of Paper for Printed Library Materials, ANSI Z39.48-1984, effective with Vol. 43, No. 6-7.*

*From p. 1*

• Update and enhance the curricula of schools of library and information science.

• Foster educational programs enabling health sciences librarians already in the workplace to update and extend their professional education and training.

• Experiment with alternative methods and courses of study for adult learning.

• Attract the best and brightest candidates the current market can provide.

• Achieve greater cultural and ethnic diversity in the profession.

The report is available on the Internet in several formats:

**❶World Wide Web**
*http://www.nlm.nih.gov/*
Listed under Research and Development Activities, Extramural Programs

**❷ Gopher**
*gopher.nlm.nih.gov*
Listed under Extramural Programs and NLM reports

**❸FTP**
*ftp.nlm.nih.gov*
Listed under extramural, trainhsl

Printed copies are available from NLM's Public Information Office, Attn: Training Report, Bethesda, MD 20894; phone: 301/496-6308, e-mail: *publicinfo@nlm.nih.gov* □

# Staff Honors

During the recent annual meeting of the Medical Library Association, both NLM's director and its associate director for Library Operations received special honors.

NLM Director **Donald A. B. Lindberg,** M.D., was presented an award "for contributions as Director of the National Coordination Office of High-Performance Computing and Communications and for leadership in providing rapid, global distribution of biomedical information to the health care community." In making the award, MLA's Board of Directors expressed the belief that Dr. Lindberg's commitment and leadership "provided significant opportunities to health sciences librarians to play a key role in the application of HPCC programs. These new technologies support the goal of our members' institutions and the Medical Library Association to provide ... crucial, relevant biomedical information which benefits all health care professionals, educators, researchers, and consumers." Dr. Lindberg was the first director of the HPCC National Coordination Office, a post he held concurrently with his directorship of NLM from September 1992 until his resignation earlier this year (*News,* January-February 1995).

**Lois Ann Colaianni,** associate director for Library Operations, received MLA's highest professional honor, the Marcia C. Noyes Award. The Noyes Award recognizes an individual whose career has resulted in lasting, prominent contributions to health sciences librarianship.

*Cont. p. 3*

# NIS Librarians Participate in Seminar at NLM

Medical library directors from eight Newly Independent States of the former Soviet Union recently completed a two-week visit to the United States, including a one-week seminar at NLM. The seminar was organized by NLM associate director for Library Operations, **Lois Ann Colaianni,** and Dr. **Craig Locatis,** Cognitive Sciences Branch, Lister Hill Center.

The visit, which also included attending the annual meeting of the Medical Library Association and the Seventh International Congress on Medical Librariarship, was part of an agreement NLM has with the Department of State to help provide certain NIS countries with improved access to biomedical information. The project, which involves providing access to NLM databases through the BITNIS Gateway and interlibrary loans, was initiated by Dr. **Richard K.C. Hsieh** (now retired), and the International Programs office now headed by associate director, Dr. **Elliot R. Siegel**.

The visiting NIS library directors, shown from left to right, are **Milvi Tedremaa,** Estonian Medical Library; **Raisa Pavelenko,** State Scientific Medical Library, Ukraine; **Raisa Kazankina,** Latvian Medical Library; **Alexandra Martinova,** Kazakhstan Republic Scientific Medical Library; **Kapitolina Shabinova,** Republic of Uzbekistan; **Leonilla Steblyanko,** Kyrgystan Republic Scientific Medical Library; **Salvinija Kociene,** Lithuanian Medical Library; **Irina Stepanova,** interpreter; **Eugenia Gorelova,** Belarus Republic Scientific Medical Library; and Dr. Locatis.

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*From p. 2*

MLA recognized Mrs. Colaianni's numerous achievements during her career at NLM—including her efforts to improve the quality and quantity of NLM's basic services—in addition to her overall achievements related to improved access to information throughout her thirty-year career. Mrs. Colaianni was inducted as an MLA Fellow in 1994 and served as chair of the International Organizing Committee for the 7th International Congress on Medical Librarianship held in Washington in May. Her past leadership positions in the MLA include a term as president, membership on the Board of Directors, chair of the Continuing Education Committee and of the Hospital Libraries Section, and serving as associate editor of the *Handbook of Medical Library Practice.* □

Making a Powerful Connection

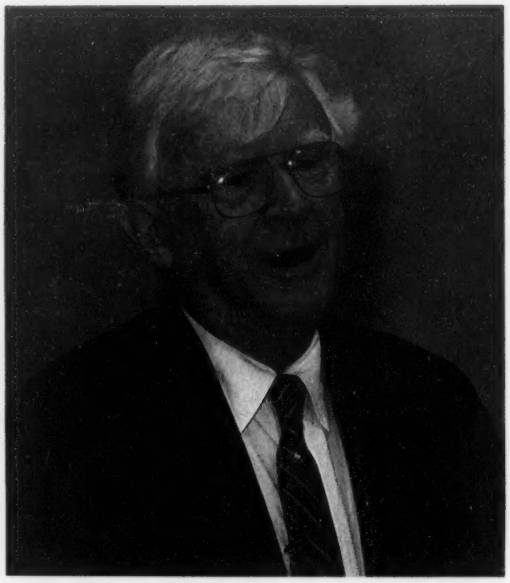
# The Health of the Public and the National Information Infrastructure

by Betsy Humphreys
NLM Assistant Director for Health Services Research Information

On April 19, 1995, the National Library of Medicine (NLM), the Office of the Assistant Secretary for Health, the Center for Disease Prevention and Control, and the Agency for Health Care Policy and Research convened a meeting entitled "Making a Powerful Connection: the Health of the Public and the National Information Infrastructure." The development of the National Information Infrastructure provides an opportunity to rethink strategies for surveying the health of the community, for controlling potential health hazards, and for intervening to reduce community health problems.

The purposes of the April 19 meeting and a smaller follow-on strategy session on April 20 were: 1) to identify and describe current public health information problems for which technology may provide solutions; 2) to review technologies that are now or could be applied to these public health problems and to discuss related research and demonstration opportunities; 3) to discuss key technical, economic, social, and public policy issues that may influence application of technology to public health information problems; and 4) to discuss a strategy for promoting use of the National Information Infrastructure to improve the detection, assessment, and control of problems that affect the health of communities and populations.

**Edward Baker, M.D., director, Public Health Practice Program Office, Centers for Disease Control and Prevention, describes CDC's important programs to connect state and local public health officials to the Internet and to provide databases and software tools useful to these groups.**

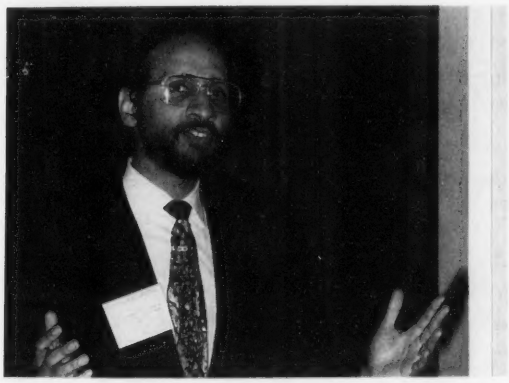


**Philip Lee, M.D., assistant secretary for health, Department of Health and Human Services, opens the conference, describing the potential benefits to the health of the nation of increased use of NII technologies in the public health arena.**

About 120 people representing Federal agencies, state and local public health depart-

**Roz Lasker, M.D., deputy assistant secretary for health (policy development), Office of the Assistant Secretary for Health (center, speaking) chairs a panel addressing strategies for increasing public health applications of the NII. Other panel members from left to right are: Ira Kaufman, clinical associate professor, Robert Wood Johnson Medical School; Thomas Kalil, National Economic Council, The White house; Kathryn Dunn, assistant vice president, sales, Defense Markets, AT&T; Laura Breeden, director, Infrastructure Development, National Telecommunications and Information Administration; and Denise Love, director, Office of Health Data Analysis, Utah Department of Health.**

ments, medical informatics and HPCC research and development groups, members of the National Network of Libraries of Medicine, and a range of private sector organizations interested in NII applications participated in the all-day meeting on April 19. Dr. **Kenneth Walker**, chairman of NLM's Board of Regents, and Ms. **Wendy Carter** represented the Board at the meeting. Dr. Walker made the concluding remarks.



**John Lumpkin, M.D., M.P.H., state health officer, Illinois Department of Public Health, outlines the tremendous range of responsibilities of state public health departments and how better information technology could support these functions.**

**Richard Sharpe, program director, The John A. Hartford Foundation, and W. Ed Hammond, Ph.D., Division of Medical Informatics, Duke University Medical Center, exchange views during one of the breaks in the meeting.**

There were a number of exhibits open to participants during the breaks and a reception following the meeting sponsored by the Friends of the National Library of Medicine and AT & T.

The need for national legislation on the privacy of health information and for more Federal leadership in the development and implementation of health data standards emerged as high priorities for the public health community—as well as for those engaged in

*Cont. p. 6*

*From p. 5*

developing computer-based patient record systems. A number of follow-on action items were identified for a range of organizations and professional associations. In addition to promoting greater public health participation in its grant and training programs and ensuring public health involvement in UMLS-related development, NLM plans to collaborate with CDC and the National Network of Libraries of Medicine to provide outreach and training in information technology for state and local public health officials.

**Kent A. Smith, deputy director, National Library of Medicine, shown with Carol G. Jenkins, director, Health Science Library, University of North Carolina at Chapel Hill (Henry Lowe, M.D., Section on Medical Informatics, University of Pittsburgh, appears in the background).**

Videotapes of the conference will soon be available from NLM and from the Regional Medical Libraries. A revision of the White Paper distributed to all participants before the meeting is nearing completion and will be distributed via the Internet. Details will be announced in a future issue of the *News*. □

# Publications

## New *Current Bibliographies in Medicine*

NLM's Reference Section produces a series of bibliographies covering distinct subject areas of current interest to the biomedical community. New titles in the *CBM95* series are listed below. The annual subscription price is $47 ($58.75 foreign); individual copies: $4.75 ($5.94 foreign). A list of available titles appears in each monthly issue of *Abridged Index Medicus* and *Index Medicus*. Mail orders to: New Orders, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. GPO Phone Orders; 202/783-3238.

*Current Bibliographies in Medicine* may also be downloaded at no cost via the Internet through the NLM Gopher (*gopher.nlm.nih.gov*) and via FTP (*ftp to nlmpubs.nlm.nih.gov* and login as *anonymous*, using your e-mail address as the password).

- CBM 95-2: *Cochlear implants.* April 1988 through March 1995. Prepared for an NIH Consensus Development Conference. 881 citations. [S/N 817-011-00002-1]

- CBM 95-3: *Asian/Pacific Islander American health.* January 1990 through March 1995. Prepared for an NIH Consensus Development Conference. 1197 citations. [S/N 817-011-00003-9]

- CBM 95-4: *Telemedicine: past, present, future.* January 1966 through March 1995. 1634 citations. [S/N 817-011-00004-7]

## *Integrated Health Care Networks*

The American Hospital Association (AHA) Resource Center periodically publishes lists of selected resources on subjects of current interest. The latest is *Integrated Health Care Networks.* Single copies are available free of charge: call 312/422-2000 or send your request to the AHA Resource Center, American Hospital Association, One North Franklin, Chicago, IL 60606. To receive a copy by fax, call AHA fax-on-demand service at 312-422-2020 and request document 471125. For further information, contact Sara Beazley at 312/422-2017. □

**Dr. Henry Lewis III, dean of the College of Pharmacy and Pharmaceutical Sciences at Florida A & M University and president of the Minority Health Professions Foundation (left) recently presented an award to the director of the National Library of Medicine, Donald A.B. Lindberg, M.D. The citation read: "For outstanding vision and leadership in strengthening the capacity of Historically Black Colleges and Universities (HBCUs) to train medical and other health professionals in the use of toxicological, environmental and occupational information resources developed by the National Library of Medicine." The presentation took place during the 5th annual meeting of the Library's HBCU Toxicology Information Outreach Panel on June 12.**

# TSD Deputy to Join NAL as Technical Services Associate Director

**Sally Sinn**, deputy chief of NLM's Technical Services Division (TSD) since 1986, recently resigned from NLM to accept the position of associate director for technical services at the National Agricultural Library (NAL). During her 22 years at NLM, Ms. Sinn played a key role in the transition from a "card catalog environment" to an online one of over 775,000 records available to librarians and health scientists throughout the world.

**Ms. Sinn**

Ms. Sinn joined NLM in 1973 as a Library Associate. After completing the program in 1974, she began working as a cataloger and systems librarian in the Cataloging Section where, from 1978 to 1986, she was assistant head. From 1979 to 1980, as acting head of the section, she played an important role in a massive project to reduce the cataloging arrearage and to develop and implement NLM's standards for limited cataloging—an innovation that has permitted the Library to provide more timely access to many items in the collection. She also directed major projects to convert NLM's manual shelflist to machine-readable form, to design and develop the first NLM system for online creation of cataloging records, and to expand the distribution of NLM's cataloging data in MARC format.

Since 1986 as deputy chief of the Technical Services Division, she has played a significant role in the continued development of automation at NLM. Recent projects include the distribution of MeSH in MARC format—a product now used by a number of health science libraries and library system vendors—and the investigation of an integrated library system to improve technical processing at NLM.

In 1988 she received the NIH Merit Award "for exceptional contributions to the development of systems that improve NLM's ability to create and distribute high quality bibliographic data for the biomedical literature."

At Ms. Sinn's farewell gathering, **Kent Smith**, NLM deputy director, remarked, "There can be no question that what Sally and her team do is the real essence of what NLM is all about. Our mission—to acquire, organize and disseminate the world's biomedical literature, begins with TSD. It is the basic library services of NLM that must be sustained particularly in these times of retrenchment."

Ms. Sinn expects to continue her interest in library automation and explore areas where cooperative projects will be of mutual benefit to both NLM and NAL and their clientele. □

# NLM Greets International Visitors During ICML

The National Library of Medicine played host to nearly 200 librarians who visited the Library on May 11th during the recent 7th International Congress on Medical Librarianship held in Washington, D.C.

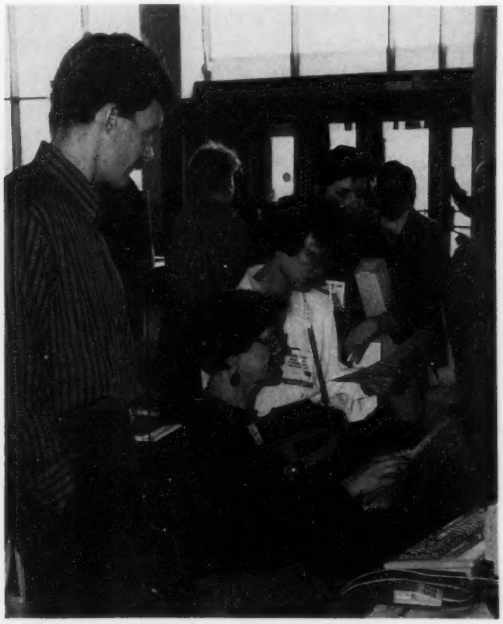
A program featuring presentations by a number of NLM officials, including NLM director **Donald A.B. Lindberg**, M.D., was followed by opportunities for the visitors to meet individually with many NLM staff members, take guided tours, and explore on their own the services in the Reading Room and other Library facilities.

The first group of ICML visitors to take a tour of NLM posed at NLM's front entrance before tour guide **Marcia Zorn** of the MEDLARS Management Section took them through the Library. *Back row (left to right):* **Beverly Betley**, Proctor & Gamble; **Robin Devin**, University of Rhode Island Library; **Ray Smith**, European School of Osteopathy, Maidstone, Kent, UK; **Yvonne Hibbott**, Oxford University; **Glenda Myers**, Witwatersand Medical Library, Johannesburg, South Africa. *Middle row:* **Deborah D. Blecic**, University of Illinois at Chicago; **Jean M. Shumway**, Department of Radiology Library, University of Iowa College of Medicine; **Masanjika Ralph**, College of Medicine, Malawi; **Judy Palmer**, Health Libraries & Information Network, The John Radcliffe Hospital, Oxford; **John Cox**, The Wellcome Centre for Medical Science, London. *Front row:* **Shwu-Jiun Wang** and **Chiou Mei-Lin**, Taiwan Adventist Hospital Medical Library, Taipei, Republic of China; **Josephine Yu-Tzuon Chuo**, Veterans General Hospital, Taipei, Taiwan, Republic of China; **R. Rama Rajurs**, Bangalore Medical College, Fort Bangalore, India; **Vipa Goysookho**, Mahidol University Library and Information Center, Nakornpathom, Thailand; **Marilynn C. Smith**, King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia.

*Cont. p. 9*

*From p. 8*

**NLM public information officer Robert Mehnert, welcomes ICML visitors as they arrive in the lobby of the Lister Hill Center.**



**Visitors had opportunities before and after the program in the Lister Hill Center auditorium to pick up fact sheets and explore exhibits hosted by a number of NLM components, including Indexing, MEDLARS Management, Cataloging, Preservation, Serial Records, Selection & Acquisition, Medical Subject Headings, National Center for Biotechnology Information, and Specialized Information Services.**

# Monograph & Serial Gaps

NLM regularly seeks the help of the medical library community in filling gaps in its monograph and serial collections. If you can provide any of these items we would be most grateful.

## Monographs

If you are able to provide a copy of any of the monographs listed below, please send to:

National Library of Medicine
TSD-MONOGRAPHS Attn: L. Turnage
Bethesda, MD 20894

Bridger WA. Cell ATP. NY: Wiley, 1983 (Transport in the life sciences, v.5).

Cozzarelli NR. Mechanisms of DNA replication and recombination: proceedings of a UCLA symposium held in Keystone, CO, April 3-9, 1983. NY: Liss, 1983. (UCLA symposia on molecular and cellular biology; new ser., v.10).

Malhotra SK. Plasma membrane: selected topics in structure and function. NY: Wiley, 1983. (Transport in the life sciences ; v.6).

Reid AJ. Calcium antagonists and the treatment of hyper-tension. London: Royal So-

*Cont. p. 10*

*From p. 9*

ciety of Medicine, c1984. (International congress and symposium series (Royal Society of Medicine); v. no.62).

Reynolds JD. Health insurance answer book. 2nd ed. Greenvale NY: Panel Publishers, c1990. (The panel answer book series).

## Serials

Please address serial issues to:

National Library of Medicine
TSD-GAPS Attn: C. Fields
Bethesda, MD 20894

*AJR. American Journal of Roentgenology* 157:2, 1991;162:4, 1994

*American Journal of Epidemiology* 136:1-3, 1992

*American Journal of the Medical Sciences* 302:1, 1991

*American Journal of Sports Medicine* 18, Suppl 1, 1990

*Anesthesiology* 79:4, 1993

*Archives of Physical Medicine and Rehabilitation* 66:1, 1985

*Clinical Pediatrics* 30:9, 1991;31:7-8,10-11, 1992

*Clinical Pharmacology and Therapeutics* 54:3, 1993

*Clinical Pharmacy* 6:2, 1987

*Critical Reviews in Toxicology* 9:4, 1982

*Dialogues in Dermatology* 21:2, 1987

*Experimental Physiology* 78:1-6, 1993

*Family Medicine* 17:5, 1985; 26:5-10, 1994

*Glycoconjugate Journal* 1:3-6, 1984

*International Journal of Pancreatology* 7:4, 1990

*ISA Transactions* 12:3-4, 1973

*Journal of the American Animal Hospital Association* 1:1-4, 1965; 2:1-4, 1966;3:1-4, 1967;4:1-2,4, 1968;5:2-4, 1969

*Journal of the American Society of Echocardiography* 5:4, 1992

*Journal of Cardiovascular Pharmacology* 16, 1990; 17 Suppl 1, 1991;20 Suppl 4, 1992; 21:6, 1993

*Journal of Consulting and Clinical Psychology* 48:4, 1980

*Journal of Foot and Ankle Surgery* 32:2, 1993

*Journal of the Medical Association of the State of Alabama* 10, 1940-41; 45:6, 1976; 50:1-6, 1980

*Journal of the National Medical Association* 84:11, 1992

*Journal of Thoracic and Cardiovascular Surgery* 103:4, 1992

*Mead Johnson Symposium on Perinatal and Developmental Medicine* 26, 1984?; 27, 1985?; 31, 1987; 32, 1988;33, 1988

*Pennsylvania Medicine* Sep 1990; Dec 1991

*Transplantation* 5 5:5, 1993

*Virology* 192:1, 1993 □

# NLM in Print

The following references cite works that discuss the products and services of the National Library of Medicine. If you know of other appropriate citations for this column, please send reprints or references to the editor, *NLM News,* National Library of Medicine, Bethesdsa, MD 20894. (*Note:* Some of the articles below may be from journals that are out of scope for the NLM collection and are therefore not available from the Library on interlibrary loan.)

AIDS/HIV information hotline available [news]. J Am Dent Assoc 1995 Jan;126(1):24.

**Adiego Leza MI, Urdangarin AG, Valles Varela H.** [Indices of biomedical bibliography in otolaryngology]. Acta Otorrinolaringol Esp 1994 Nov-Dec;45(6):395-9.

**Bhatia RS.** Indian medical journals: a glimpse through Science Citation Index [letter]. J Assoc Physicians India 1994 Jul;42(7):584.

**Craig C.** NIH's GenBank takes aggressive

*Cont. p. 11*

# Fred Buschmeyer Mourned

NLM staff were saddened to learn of the death on April 22 of Fred Buschmeyer, assistant chief of the Library's Audiovisual Program Development Branch.

Mr. Buschmeyer had been with NLM since 1970, when he joined the Library's Atlanta-based National Medical Audiovisual Center as assistant director for operations. In 1971, he became NMAC deputy director, moving with a number of NMAC staff members to Bethesda when the Center relocated here in 1972. In 1980, after NMAC merged organizationally with several existing NLM components, he was named assistant chief of Lister Hill's AV Program Development Branch, a position he held until his death.

Mr. Buschmeyer had a distinguished career in the Navy during World War II, and his interment was at Arlington National Cemetery on June 9th. Following his military service, he came to Washington, D.C., where in 1949, he earned a B.A. in theater from George Washington University. After graduation, he started working in television, first in Washington, D.C. and later in Los Angeles, Little Rock, Buffalo, and St. Louis, Missouri. In the early 1960s, back in D.C., he was production manager at NBC-TV. In 1963 he became chief of TV production for the U.S. Information Agency, where he worked until 1970.

In addition to his knowledge and experience in audiovisual program development, he was a published poet whose witty poems were the highlight of many staff retirement parties. His effervescent personality, warmth, and humor will be missed by all who worked with him. □

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*From p. 10*

role in genome research. Bio World Today 1995 Apr 26; 1, 3.

**Craig C.** GenBank integrating data bases to assist gene discoveries. Bio World Today 1995 Apr 27; 1, 2.

**Craig C.** U.S. funding two data bases for genomics research. Bio World Today 1995 Apr 28; 1, 4.

**Crepet P, Zoppi O, Tartaglia R, Carnevale F, Salerno S, Bagnara S.** [Relations between mental health and work. Review of the literature]. Med Lav 1994 Jul-Aug;85(4):275-88.

**Custis DL.** USUHS take heart: NLM had its troubles, too. US Med 1995 Mar;:15.

**Dickersin K, Scherer R, Lefebvre C.** Identifying relevant studies for systematic reviews. BMJ 1994 Nov 12;309(6964):1286-91.

**Fingar AR.** SOLONET: a program to meet the health information needs of rural practitioners in Southeastern Ohio. Ohio Research Clin Rev 1995 Win;:9-11.

**Goldstein DM.** Further ethics resources [letter]. Ann Intern Med 1995 Apr 1;122(7):557.

**Larner AJ, Conway MA.** Relapsing bacterial meningitis [letter]. QJM 1995 Jan;88(1):75-6.

**Layson RT, Adelman HM, Wallach PM, Pfeifer MP, Johnston S, McNutt RA.** Discussions about the use of life-sustaining treatments: a literature review of physicians' and patients' attitudes and practices. End of Life Study Group [see comments]. J Clin Ethics 1994 Fall;5(3):195-203.

**Lindberg DAB.** The information infrastructure of health care. In: Andrade JD, ed. Medical and biological engineering in the future of health care. U Utah Press, 1994; 113-7.

**Lindberg DAB, Humphreys BL.** Computers in medicine. JAMA 1995 Jun 7;273(21):1667-8.

**Lindberg DAB, Humphreys BL.** The High-Performance Computing and Communications Program, the National Information Infrastructure, and health care. J Am Med Informatics Assoc 1995 May/Jun;2(3):156-9. *Cont. p. 16*

NATIONAL INSTITUTES OF HEALTH
NATIONAL LIBRARY OF MEDICINE
FACT SHEET
A World of Knowledge for the Nation's Health
June 1995

# NATIONAL LIBRARY OF MEDICINE TELEMEDICINE ACTIVITIES

## Background

Telemedicine is the use of telecommunications technology for medical diagnosis and patient care, and is a medium for the provision of medical services to sites that are at a distance from the provider. The concept encompasses everything from the use of standard telephone service to high speed, wide bandwidth transmission of digitized signals in conjunction with computers, fiber optics, satellites, and other sophisticated peripheral equipment and software.

The National Library of Medicine (NLM) collects and indexes literature related to telemedicine through its MEDLINE® and HSTAR (Health Services/Technology Assessment Research) databases. HSRProj is a new database that provides information on grants and contracts awarded by major public and private funding agencies in the area of health services research, including telemedicine. The NLM collaborates with a number of institutions in the development of leading-edge technologies for telemedicine applications.

## NLM HPCC Program

During FY 1994 NLM awarded twelve research contracts for "Biomedical Applications of High Performance Computing and Communications." Many of these have a telemedicine focus.

West Virginia University is working with a consortium of institutions to create a regional telemedicine system for rural areas of the state. The University of Iowa is using the Iowa Communications Network to establish a National Laboratory for the Study of Rural Telemedicine. The University of Pittsburgh is implementing a teleradiology system linking the university with outlying hospitals in the state. The Northwestern Memorial Hospital is creating linkages between the hospital and primary care locations in the Chicago metropolitan area. The University of California, San Francisco is conducting experiments involving the consultation, interpretation, and monitoring of satellite sites by neuro-imaging specialists at UCSF. Oregon Health Sciences University is testing the ability of high-speed computers and networks to improve the provision of dermatologic care. Indiana University is using digital networking technologies to link a teaching hospital with community clinics and pharmacies. Information about all twelve HPCC awards can be found at the following World Wide Web site: http:// www.hpcc.gov/, listed under Grants and Research Contracts/ Awards.

## NLM Grants Program

Four existing NLM granting programs focus heavily on the networked flow of health information, and grants awarded often have telemedicine goals.

Information Access Grants provide $12,000 for single institutions and $12,000 per member for consortia to purchase basic computer and communications equipment to access NLM's Grateful Med®, DOCLINE®, and Loansome Doc™ services. Internet access is strongly encouraged. These grants are for one year except for consortia which qualify for an initial planning year to organize the membership and conduct a needs assessment. They are directed towards small and medium-size health institutions and especially towards consortia in remote rural areas where outlying institutions can network with a larger site equipped with back-up collections and library staff.

Information Systems Grants range up to $150,000 per year for one to three years and are targeted for larger health institutions such as teaching hospitals and academic health centers. Projects support computer and communications networking, integration and connectivity and must include the library as a participating partner. Internet capabilities are emphasized.

Internet Connections Grants provide support to health institutions involved in research, education, and patient-care to obtain an initial hook-up to the Internet. These grants are available in two forms: 1) $30,000 to single institutions and 2) $50,000 to those extending their existing connection to other sites, for example, teaching hospitals. Grant funds support costs for router/gateway equipment and associated connection hardware, installation and leasing of communication circuits to connect to an Internet provider, and membership fees to a provider.

IAIMS (Integrated Advanced Information Management Systems) Grants are institution-wide computer networks that link and relate library systems with a variety of individual and institutional databases and information files, within and external to the institution, for patient care, research, education, and administration. IAIMS grant support is available for: 1) an institution-wide planning phase with funding up to $150,000 per year for one to two years and 2) an operation phase for IAIMS plans to be implemented with up to $500,000 per year for one to five years or $550,000 per year if an IAIMS apprenticeship is included.

NLM's Extramural Program Division can be reached by Internet e-mail at epmail@occshost.nlm.nih.gov, by telephone at (301) 496-4221, or by FAX at (301) 402-0421.

**Institute of Medicine Telemedicine Study**

In FY 1995, NLM, together with the Health Care Financing Administration and the Department of Veterans Affairs, is sponsoring a study by the Institute of Medicine of the National Academy of Sciences. The study will examine the appropriate criteria for evaluation of the impact of telemedicine on access, quality, and cost of care. In FY 1997, these criteria should be applied to evaluations of telemedicine projects supported by NLM and other Federal agencies.

**NLM Internal R & D related to Telemedicine**

Issues important in telemedicine are being addressed in several projects at the National Library of Medicine. The Visible Human Project, a 3-D computerized cadaver and a detailed atlas of the human body, was assembled digitally from thousands of x-ray, magnetic and photo images of cross-sections of the body. Among the goals of the Visible Human Project is the establishment of standards needed for linkages between image data and such text-based data as names, hierarchies, principles and theories, so that a print library and an image library could serve as a single unified resource for medical information. To develop a system of knowledge structures that can transparently link visual knowledge forms to symbolic knowledge formats is the long-term goal. Image data comprising some 1,800 micro-thin slices have been acquired from a male cadaver and data from a female cadaver will be available soon. Image data include transverse CT, MRI and high resolution cryosection color images. NLM makes the data available to interested researchers and developers.

In the course of creating an electronic image archive of digitized x-rays and providing access to it over the Internet, the DXPNET project addresses such issues as image compression, high density storage, high speed transmission, and user-machine interface design. The project is a collaborative effort among the NLM, the National Center for Health Statistics (NCHS), and the National Institute of Arthritis, Musculoskeletal and Skin Diseases (NIAMS). The NLM, through the Lister Hill National Center for Biomedical Communications, serves in the role of developer and technical manager for the project.

The DocView™ project investigates end user access to the medical literature in the form of scanned pages of journals and other sources sent over the Internet from Ariel workstations (increasingly used by libraries) and document image databases. DocView is client software running under Microsoft Windows that has a communications module capable of TCP/IP linkage (for receiving Ariel transmissions), and also the capability of being used as a viewer for documents received by an Internet client such as NCSA Mosaic. In either case, the end user may display, manipulate, cut and paste, electronically bookmark the received pages, and print only the pages desired.

**Telemedicine Current Bibliography in Medicine**

A bibliography on telemedicine research has recently been prepared and is available via anonymous ftp: nlmpubs.nlm.nih.gov/bibs/cbm/telembib.txt, and as the file "Telemedicine: Past, Present, Future" on the NLM gopher server (gopher.nlm.nih.gov/), under Resource Lists and Bibliographies, Current Bibliographies in Medicine. Printed copies will be available later this spring in the Current Bibliographies in Medicine series.

For further information about the programs described here contact:

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# FACT SHEET

A World of Knowledge for the Nation's Health

June 1995

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*MEDLARS (MEDical Literature Analysis and Retrieval System) is the computerized system of databases and databanks offered by the National Library of Medicine.

For more specific information regarding NLM's International Programs, please contact:

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*From p. 11*

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